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22 April 1957

CMCC Doc. No. 151X5.521

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Dear Dick:

We are forwarding herewith eight copies of Monthly Progress Letter No. 9, covering work performed on System No. 4 during the period extending from 1 February 1957 to 1 March 1957.

Sincerely,

Burt

Burt

Enclosures:

CMCC Doc. No. 163X5.34

Copies 1-8 of 12

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ENCL #1
SAPC 15095
COPY 1 OF 8

Monthly Progress Letter No. 9

Contract No. A-101

System 4

1 February 1957 to 1 March 1957

CMCC Document No. 163X5.34

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(This document contains a total of 37 sheets,
including this title sheet.)

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1. General

a. During the period covered by this progress letter, engineering tests on the basic prototype system were completed, and the system was sent to the field for initial flight testing. The basic system sent to the field on February 21 lacked only certain of the receiving equipments, but was functionally complete. Receiving equipments included with the basic system sent to the field were for Bands II, VII, VIII, and IX. At the close of this reporting period, engineering tests on Band V were almost completed.

b. The following paragraphs provide a resume of the engineering tests performed on the System 4 prototype during this reporting period.

2. Antennas

Engineering tests performed on the antenna equipment during this period related to the measurement of over-all cable losses in the actual installation. Cable losses were negligible below 1 kmc. Figures 1, 2, 3, and 4 show typical cable losses involved in Bands IV, V, VI, and VII, respectively.

3. Receiving Equipment

As indicated in paragraph 1 above, engineering tests have not been completed on all receiving equipments. The more significant data obtained on engineering tests for Bands II, V, and VII are summarized as follows:



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This test was conducted with a constant signal-current and constant bias-current.

(2) Transfer Characteristic as a Function of Frequency:

The dynamic range of a typical channel, as a function of frequency of the recording-current, is shown in figure 27. Linear dynamic range is somewhat low at high frequencies as compared to the 1-kc median frequency.

(3) Flutter Measurements: Extensive flutter measurements were made for both forward and reverse playback as a function of varying conditions of capstan drive. The best set of conditions yielded an over-all flutter figure of 0.13 percent rms. This is illustrated in figure 28.

5. Power Supply

a. Tests were performed on the system power supply to determine its regulation performance under varying line voltage and load current conditions. Measurements relating to the performance of the individual supplies are shown in table 1.

b. After correction of some minor deficiencies, the equipment was successfully operated for several hours under full load in a test environment equivalent to 50,000 feet altitude and 100°F temperature. The temperature within the unit did not exceed 60°F, which is well below the critical point for the silicon transistors and diodes used.

6. Planning

a. During the next monthly interval, major effort will be directed toward completing field tests, completing engineering tests of the remaining receiving equipments, and correcting the sensitivity discrepancies in the equipments used in field test.

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b. Present scheduling also calls for the fabrication of a complete production system during the next monthly interval. The first series of production systems will follow the prototype system very closely. However, it is planned to reduce the weight of the prototype system considerably.

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